VERMONT

Vermont Agency of Transportation

Program Development – Structures Section

2013 Annual Report

Interstate Bridge Program
State Highway Bridge Program
Town Highway Bridge Program

Brattleboro I-91, bridge #6S – VTrans' 1st Design-Build Project

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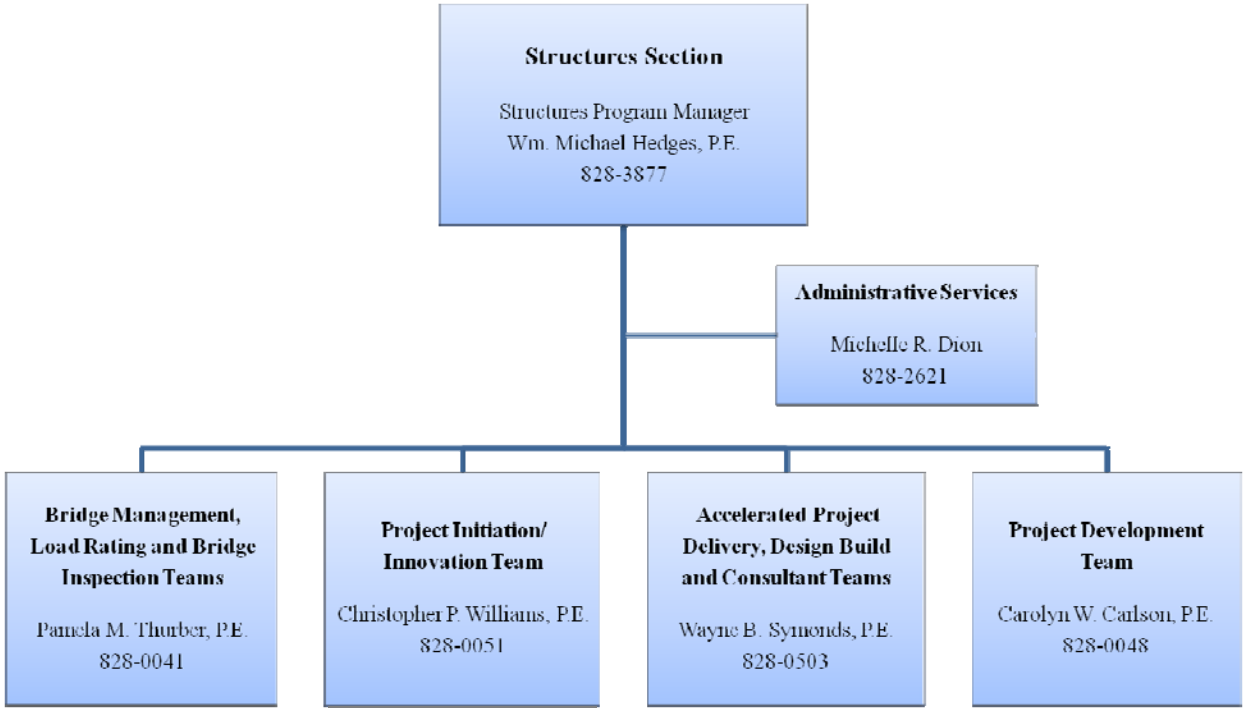
Executive Summary

2012 has been an exciting year for VTrans' Structures Section. Structures recently reorganized to improve project delivery and treatment selection. The new Project Initiation and Innovation Team (PIIT) was formed to develop better project scopes, schedules, and budgets. This team looks to identify projects which can be advanced and constructed more quickly due to reduced resource and right-of-way (ROW) impacts. New Accelerated Bridge Program (ABP) teams were also formed to quickly advance these projects utilizing Accelerated Bridge Construction (ABC) techniques where road closures are measured in weeks, days, and even hours rather than months and years. Still other teams were formed to utilize staff more effectively on more traditional projects.

Bridge Management has partnered with the PIIT and Program Development's Asset Management Unit to assure that the right treatment has been selected for the right bridge at the right time. Similarly Bridge Inspection has strived to reach full compliance with new federal inspection metrics while making hundreds of extra appraisals of Tropical Storm Irene flooded bridges.



Inspecting our network of nearly 4,000 bridges to assure public safety and expediting the delivery of projects to maintain and enhance the interstate, state, and town highway bridges will continue to be the main focus of the Structures Program. Continuing repair work and replacing temporary bridges made necessary by Tropical Storm Irene increases our challenge.

Vermont has 2,712 long structures greater than 20 feet on interstate, state, and town routes and another 1,265 short structures greater than 6 to 20 feet on the state system that VTrans inspects. Inspections are conducted every 24 months on long

structures and every 60 months on short structures unless conditions warrant more frequent inspections. Deck, superstructure, substructure, and channel conditions are all evaluated and each component is ranked on a scale of zero to nine, with nine indicating an excellent condition and zero a failed condition. Conditions are reported to the Federal Highway Administration (FHWA) and, by and large, a condition rating of four (poor) or lower for any component determines that the bridge is structurally deficient. Of those 2,712 long structures, 9.85 percent are considered structurally deficient by federal standards.

Using national adjusted bridge data adjusted and report on FHWA's website, Vermont ranks 23rd among the 50 states for percentage of structurally deficient bridges. This is due, in large part, to the age of our bridge network. Many of our bridges replaced bridges flooded in 1927 and are now in need of replacement or major rehabilitation, while our interstate bridges, some now exceeding 50 years of age, are now in need of rehabilitation.

To address these needs Vermont utilizes bridge management systems, techniques, and logic along with a prioritization system to identify appropriate treatments for the bridge network and the appropriate timing. These treatments can range from complete replacements and major rehabilitations to preservation activities such as preventive maintenance.

Bridge conditions are improving. Funding increases have occurred nearly every year from $48.7 million in FY05 to $123.6 million in FY13. This is a result of numerous congressional earmarks, ARRA funding, Bridge Maintenance funding, and Administration and Legislative support in recent years.

Vermont has ramped up its Bridge Maintenance and Preservation activities which will pay dividends well into the future. From its modest start of $4.7 million in FY06, Bridge Maintenance has climbed to $36.8 million in FY13. These treatments do little to improve structural deficiencies, but will extend the lives of and better bridges.

Percent structurally deficient is a national performance measure. Based on our data, Vermont's interstate bridges were last found to be 4.15 percent structurally deficient. Bridges on the state system were found to be 9.31 percent structurally deficient, and bridges on the town system were found to be 11.23 percent structurally deficient.

Given our current conditions and national ranking, we recently raised the bar on our performance goals in an effort to improve bridge conditions. Our strategy varies, with the highest standard for the interstate where traffic and expectations are highest. State bridges provide greater movement of people and goods than town bridges so state bridge standards will fall between the interstate and town highway bridge standards. Vermont's goal for the percentage of bridges that are structurally deficient is 6% for the interstate, 10% for state bridges, and 12% for town bridges.

Accelerated Bridge Program

VTrans implemented the Accelerated Bridge Program (ABP) in January, 2012. The primary focus of the ABP is to improve the condition of Vermont's Bridges while reducing project costs through shortened project development, delivery, and construction. For example, one of the fundamental performance goals for the program is to reduce the standard design phase from 60 to 24 months.

The ABP is a laboratory for innovation. Throughout the program, the Structures Section will implement and assess performance on a number of innovative methods of project delivery. The Section has already implemented a number of innovative technologies and bold strategies aimed at improving project delivery. Some techniques that have been implemented include:

Reorganization - At the inception of the program, the Structure's Section reorganized to improve efficiency by creating a Project Initiation and Innovation Team (PIIT), responsible for analyzing project constraints and consistently determining the best bridge treatment alternative. Structures also formed accelerated and conventional design groups bringing together a combination of experienced project managers and bridge engineers.

Standardization - In February, VTrans volunteered to beta test and incorporate an accelerated bridge construction (ABC) tool kit developed through the second Strategic Highway Research Program. By standardizing compatible and interchangeable design details, projects will be completed more efficiently both during design and construction saving time and money. Many of these details have been successfully used on the Irene emergency bridge replacement projects allowing these critical structures to be replaced within a year of the storm event.

Thetford VT 113, bridge #8 – precast bridge seats cuts down on construction time

Earlier Public Involvement - Project managers are seeking earlier involvement from the regional planning commissions and towns to obtain as much information as possible about site conditions and community concerns to help ensure a productive working relationship and minimize impacts due to short term road closures. To create greater interest in ABP deployment at the town level, Vermont reduces the local share for all town highway bridge projects with road closures by fifty percent. Overall, road closures shorten construction mobility impacts while reducing workers exposure to traffic hazards.

Streamlining the Project Development Process - The ABP team implemented a streamlining initiative that has produced measurable reductions in project delivery times. For example, short term road closures significantly reduce or in many cases eliminate impacts to right-of-way, utilities, and environmental resources shortening steps in the project development process. This provides better predictability of project schedule due to reduced risk of complicated resource impacts. In addition, project schedules were examined and modified for concurrent activities, or activities that may be accomplished at the same time, and activities that may begin earlier in the process.

Innovative Contracting Techniques - The Structures Section will be completing a number of projects utilizing Design-Build contracting. This contracting method is different from the traditional design-bid-build method in that projects are awarded to a single entity responsible for design and construction of a project. By allowing the design and construction teams to work together, projects will be completed within shorter timelines. In addition, on select design-bid-build projects, the ABP team will employ incentive/disincentive contracts, which reward contractors for early completion of projects. Structures' has also utilized FHWA's Special Experimental Projects No. 14 (SEP-14) Program to evaluate additional expedited contracting methods.

Celebration of Success

- 28 projects have been designated into the accelerated bridge program at cumulative cost of $38.5 million.
- These 28 projects represent approximately 42% of the 66 bridge projects funded since January 2011.
- 12 of the projects in the ABP, or 43%, are Irene emergency projects.
- 18% of the ABP are town highway bridge projects while the remaining 82% are state bridge project.
- To date, two projects have advanced into the construction phase while all the other APB projects are scheduled to be awarded by May 2014.

Brighton VT 102, bridge #88 – project was constructed in 30 hours with a road closure

Vermont's Bridge Population

In conformance with the National Bridge Inventory (NBI), Vermont maintains an historical record of all bridges subject to the National Bridge Inspection Standards (NBIS). These standards establish requirements for inspection procedures, frequency of inspections, qualifications of personnel, inspection reports, and both the preparation and maintenance of a state bridge inventory. The NBIS apply to all structures defined as bridges that are longer than 20 feet in length and located on public roads. These assets are commonly referred to as long structures. Short structures are those having a span length of greater than six feet up to or equal to 20 feet.

Vermont's "Highway" Structure Population
(as submitted to FHWA in April 2012)

Structure Type	Interstate	State Highway	Town Highway	Other	Total
Long Structures (span length > 20 feet)	**313** (48 buried structures)**	**773** (60 buried structures)	**1,620** (89 buried structures)	**6** (2 buried structures)	**2,712** (199 buried structures)
Short Structures (span length ≥ 6 feet and ≤ 20 feet)	**211** (211 buried structures)	**1,054** (881 buried structures)	*** (see note)	*** (see note)	**1,265** (1,092 buried structures)
Totals	**524**	**1,827**	**1,620**	**6**	**3,977**

**Buried structures include metal culverts, concrete box culverts, frames, masonry arches, and concrete arches.

***Note: VTrans does not maintain an inventory of town highway or other short structures.

Vermont's "Off-Highway" Structure Population
(as of December 2012)

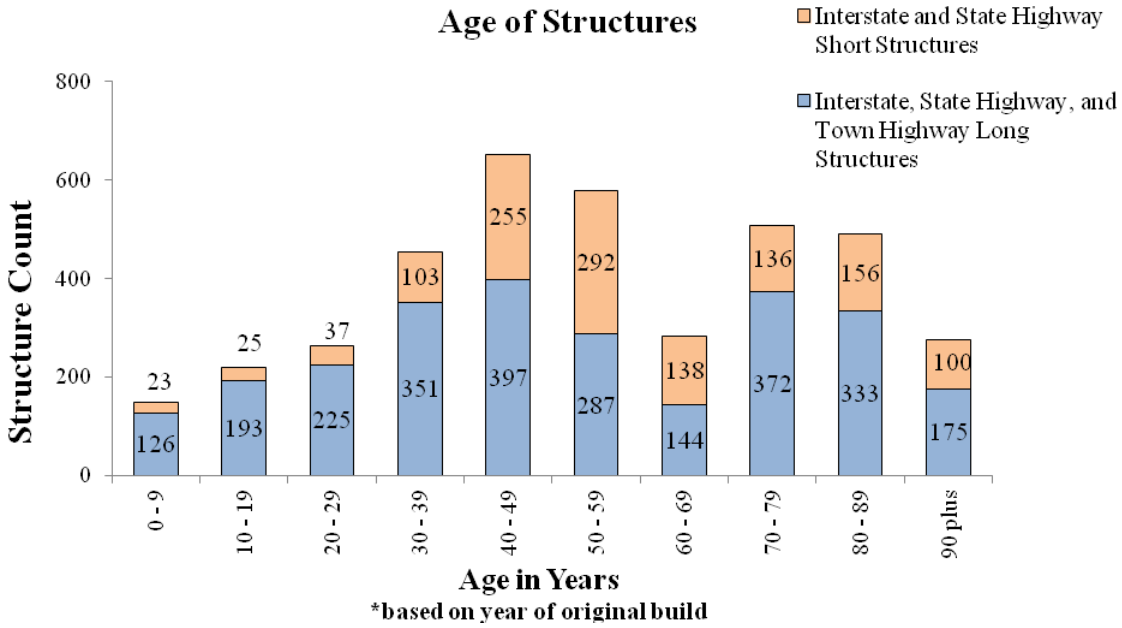
Structure Type	State Highway	Town Highway	Total
Retaining Walls (height greater than 3 feet)	**239**	**** (see note)	**239**
Recreational Path Structures (span length greater than 6 feet)	**0**	**113**	**113**
Overhead Sign Support Structures	**134**$^{\Delta}$	**** (see note)	**134**$^{\Delta}$
Totals	**373**	**113**	**486**

****Note: VTrans does not maintain an inventory of municipally-owned retaining walls or overhead sign support structures.

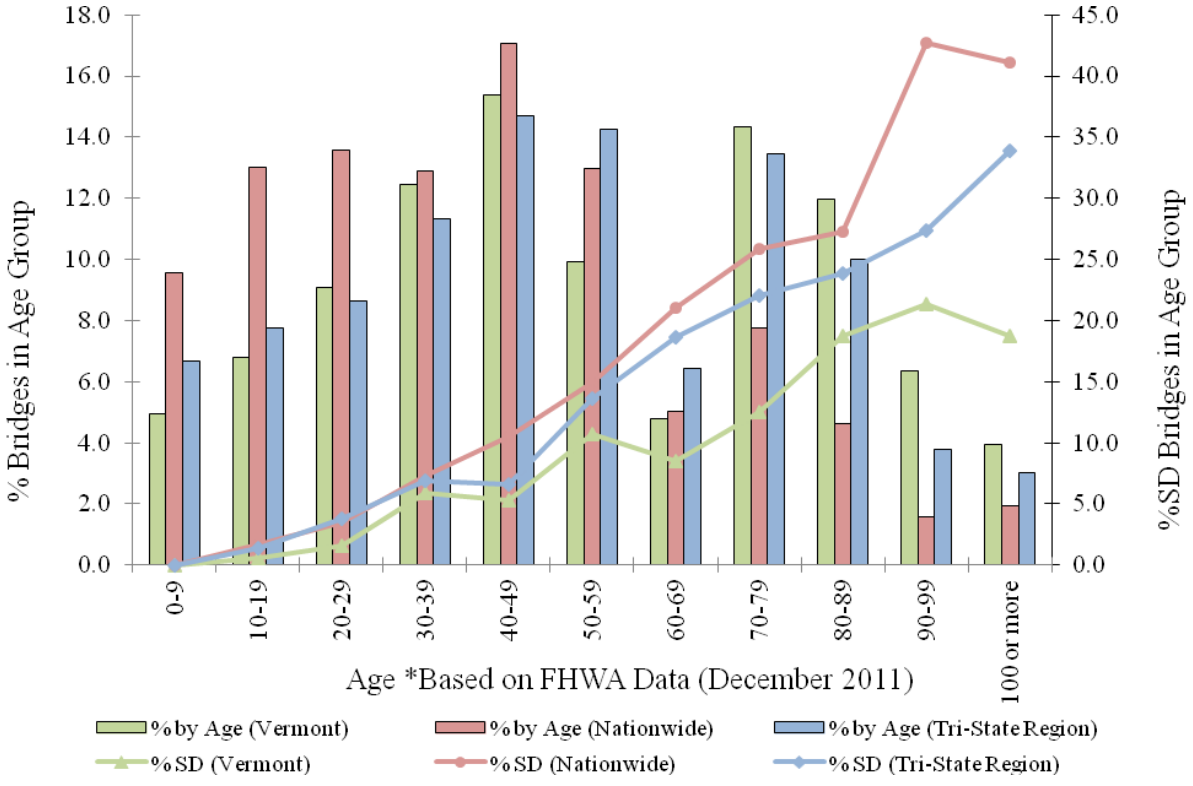
$^{\Delta}$Note: This number is expected to change as inspection criteria is refined (i.e., minimum sign size, attachment, etc.).

Aging Bridge and Culvert Inventory

With 1927 flood-era bridges now over 80 years old and nearing the end of their useful design life, as well as the 1958-to-1978 Interstate-era bridges around the 45 year mark and in need of repairs or rehabilitation, a wave of structures in need of major investment is quickly approaching.



Vermont's bridges are similar to the other northern New England states, but are considerably older than the national average. Covered bridges, steel truss bridges and other historic structures contribute to our village centers and scenic character. These older bridges require regular maintenance and are a challenge to keep serviceable.



Bridge Inspection and Condition Ratings

The nation's current bridge inspection practice was established largely as a response to disasters involving bridge failures. With each failure, new facts were learned and new standards implemented. Here is a short list of some events that have dramatically influenced national inspection and maintenance practice.

On December 15, 1967, the 2,235 foot Silver Bridge at Point Pleasant, West Virginia collapsed into the Ohio River killing 46 drivers and passengers. This tragic accident aroused national concern about bridge safety inspection and maintenance, and motivated Congress to enact improvements to the Federal Highway Act of 1968. Three years later in 1971, National Bridge Inspection Standards (NBIS) were created, setting national policy for inspection frequency, inspector training and qualifications, reporting formats, and procedures for inspection and rating.

During the 1970s, similar attention was also directed to culverts after several collapses claimed more lives.

In 1983, the Mianus River Bridge in Connecticut collapsed after one of its pin-and-hanger assemblies failed, leading to an emerging national emphasis on fatigue and fracture-critical elements.

In April 1987 with the fall of the Schoharie Creek Bridge on the New York Thruway, new attention also was focused on underwater inspection of bridge foundations.

And most recently, in August of 2007 the I-35W highway bridge over the Mississippi River in Minneapolis collapsed. Undersized gusset plates and the stress of 287 tons of stockpiled construction material were singled out in the National Transportation Safety Board (NTSB) Accident Report as reasons for the failure. Federal safety investigators said the collapse was unavoidable once gusset plates in the bridges center span failed, dragging other sections and rush-hour commuters into the Mississippi River. The collapse killed 13 people and injured 145 others. This has lead to an emphasis on gusset plate inspection and design.

Guided by federal requirements, all bridges in excess of a 20 foot span and located on public roads receive regular, biennial inspections by qualified personnel to ensure safety of the traveling public. Short structures, those greater than 6 feet and up to 20 feet in span length, located on either the interstate or state highway systems are inspected once every 60 months. Bridge safety is taken very seriously. If deemed necessary because of deteriorating conditions, bridges are inspected more frequently.

FHWA recently strengthened oversight of bridge inspections and maintenance with the introduction of a new bridge initiative using systematic, data-driven, and risk-based reviews and analysis to improve oversight of how States are performing their bridge inspections. This new process, using and reporting on key metrics, each linked direly to NBIS requirements, will help identify opportunities for improvement in achieving consistent compliance with the National Bridge Inspection Standards (NBIS).

The new process is based on objective, statistical data, providing for greater consistency in bridge inspections nationwide and more strategic approaches to identifying problem areas. Key metrics include inspection records; determination of bridge load limits; qualifications of inspection personnel; procedures for underwater, fracture-critical, and complex bridge inspections; and inspection frequency.

Through periodic safety inspections, data is collected on the condition of each structure's primary components. Condition ratings are collected for the following bridge components:

- *Deck* - the portion of a bridge that provides a surface for vehicular or pedestrian traffic
- *Superstructure* - the portion of a bridge above the substructure that supports the deck, including beams, girders, trusses, and bearing devices which support traffic and transfer the loads to the substructure
- *Substructure* - the portion of a bridge below the bearing device, built to support the superstructure and transmit loads to the foundation

The *culvert* condition rating describes all structural elements of culvert designs which do not have a distinct deck, superstructure or substructure and are buried under fill. The *channel and the channel protective system* are also rated, describing the physical conditions of slopes, as well as the channel or water flow through the bridge.

Bridge inspectors utilize a point system from zero to nine, where nine indicates an excellent condition and zero indicates a failed condition. Inspectors visually assess the ratings based on engineering expertise, training, and experience. These ratings form the basis for assessing the structural condition of the bridge.

Recommendations for maintenance or repair needs, load restrictions or posting, or closure originate with, and are based on, inspection findings. Inspection provides a visual record of structural health – including deterioration – and the consequent determination of a structure's ability to continue to perform in a safe manner.

The challenges faced in the northeast – having an older and aging infrastructure, seasonal limitations on performing inspections, extensive use of deicing salts and accelerated corrosion rates – are among the more demanding and the importance of routine inspections cannot and should not be underestimated.

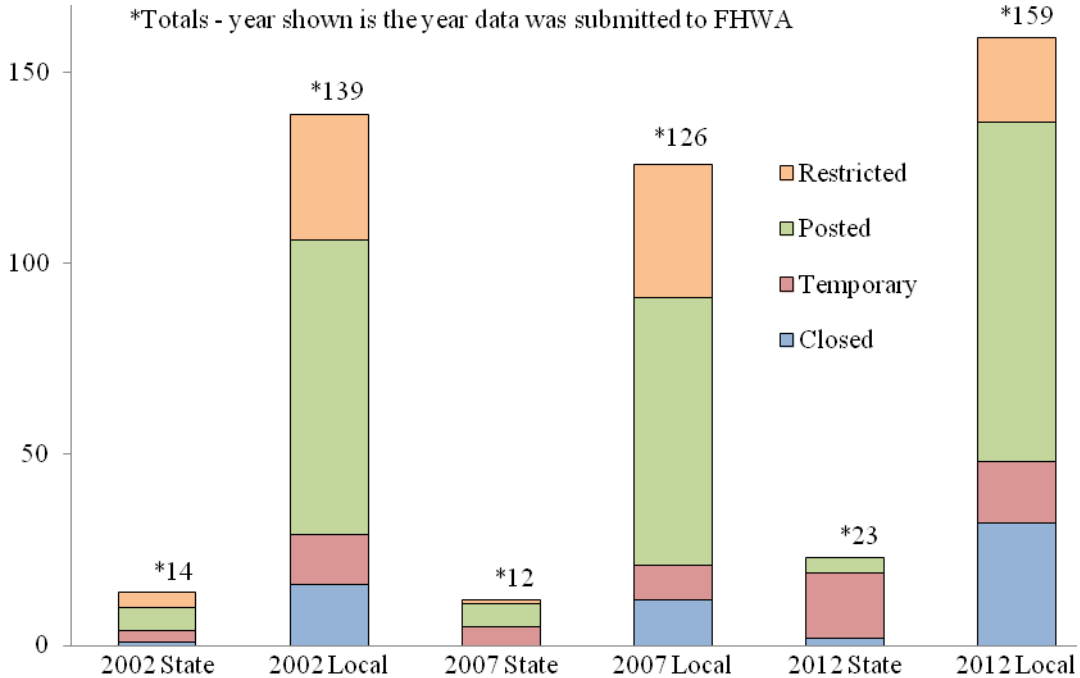
Restrictions

As VTrans searches for the most appropriate performance measures to help target which structures are in most need of repair or rehabilitation, it is important for the Agency to understand how much ground is either being lost or gained in terms of keeping our assets open and unrestricted for public travel.

Restrictions – a limitation of or inability to use a structure – come in four basic categories:

- *Closed* - bridge closed to all traffic
- *Temporary* - open but with a temporary structure in place to carry legal loads while original structure is closed and awaiting replacement or rehabilitation
- *Posted* - reduced maximum allowed weight; posted structures may include other restrictions such as temporary bridges which are load posted
- *Restricted* - posted for other load capacity restrictions such as speed, number of vehicles, vertical clearance, etc.

Due to recent public attention on the condition of our bridges, many believe Vermont has more restricted bridges than it did 10 years ago, when in fact, prior to 2012 which showed an increase as a result of infrastructure damage caused by Tropical Storm Irene, the state trend had been decreasing. With an increasing frequency of large storms and an infrastructure with continues to age, downward trends will become more difficult to maintain in the future.



	2002 State	2002 Local	2007 State	2007 Local	2012 State	2012 Local
Restricted	4	33	1	35	0	22
Posted	6	77	6	70	4	89
Temporary	3	13	5	9	17	16
Closed	1	16	0	12	2	32

Structurally Deficient and Functionally Obsolete

The Agency is evaluating a number of performance measures by which to judge how well we are maintaining our structure assets. Measures such as bridge health index; averaged condition; worst condition; numbers and deck area of structurally deficient and functionally obsolete bridges; and the number of restricted, posted, closed, or temporary bridges are all being considered.

For many years, the Federal Highway Administration (FHWA) has used structural deficiency and functional obsolescence measures. Similarly, VTrans has used percent bridges structurally deficient by system (interstate, state highway, and town highway).

Where do the terms structurally deficient and functionally obsolete come from and how are they defined? Both are terms FHWA uses to classify bridges "according to serviceability, safety, and essentiality for public use" to meet the requirements of Title 23 of the United States Code (23 U.S.C. 144). The technical definitions are as follows (source: 23 C.F.R. 650D).

- *Structurally Deficient (SD)* - A bridge becomes structurally deficient when at least one of six items from the National Bridge Inventory (NBI) reaches a set threshold. The criteria are a Deck Condition Rating, Superstructure Condition Rating, Substructure Condition Rating, or Culvert Condition Rating of 4 (Poor Condition) or less, or a Structural Evaluation Appraisal Rating or Waterway Adequacy Appraisal Rating of 2 (basically intolerable, requiring a high priority of replacement) or less. Any bridge that is classified structurally deficient is excluded from the functionally obsolete category.

- *Functionally Obsolete (FO)* - A bridge becomes functionally obsolete when at least one of five items from the National Bridge Inventory reaches a set threshold. The criteria are a Deck Geometry Appraisal Rating, Underclearances Appraisal Rating, Approach Roadway Alignment Appraisal Rating, Structural Evaluation Appraisal Rating or Waterway Adequacy Appraisal Rating of 3 (basically intolerable, requiring a high priority of corrective action) or less. Any bridge that is classified structurally deficient is excluded from the functionally obsolete category.

Highway bridges classified as functionally obsolete are not structurally deficient, but according to federal standards their design is outdated. They may have lower load carrying capacity, narrower shoulders, or less clearance underneath than bridges built to the current federal standard. Vermont, due to the historic nature of its bridges as well as environmental concerns associated with bridge widening, has established state standards that differ from federal standards. As a result, it is possible for a new bridge built in Vermont to be classified as functionally obsolete. Also, Vermont does not always "modernize" its functionally obsolete bridges. An example is the state's covered bridges, which are functionally obsolete, but no one wants them altered.

While functional obsolescence is not one of our performance measures, we report it here as a federal measure. It is important to note that when structural repairs are made to structurally deficient bridges the functional obsolescence count may rise.

The fact that a bridge is structurally deficient (SD) or functionally obsolete (FO) does not mean the bridge is inherently unsafe. The VTrans inspection unit takes bridge safety very seriously. If unsafe conditions are identified during an inspection, the structure will be restricted or closed.

Functional Obsolescence/Deficient (FO) and Structural Deficiency (SD) Population
(as of or reported to FHWA in April 2012)

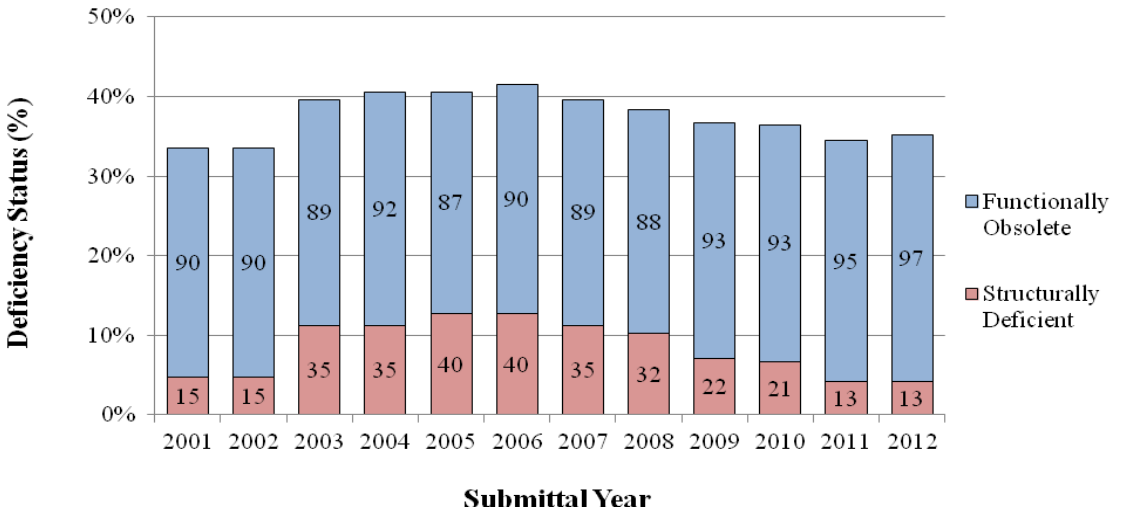
	FO	% FO	SD	% SD
Interstate "Long" Structures	97	30.99%	13	4.15%
State Highway "Long" Structures	97	12.55%	72	9.31%
Town Highway "Long" Structures	352	21.73%	182	11.23%
On-System "Short" Structures	N/A	N/A	115•	9.09%
System Total	546		382	

•Note: FO and SD are federal definitions not applied to "short" structures. This number represents "short" structures having a condition rating of poor or less.

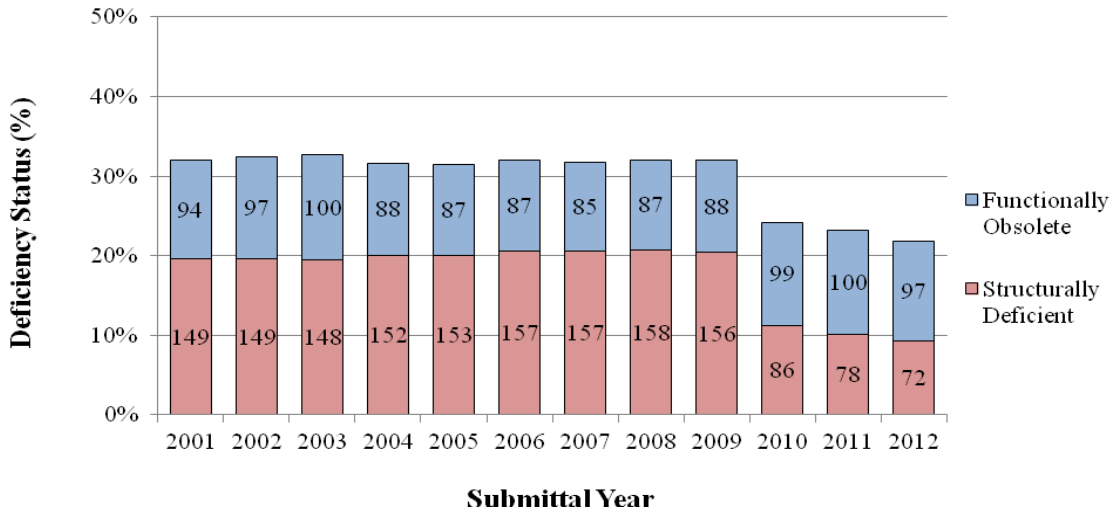
St. Albans VT 104, bridge #20 – FO

Sunderland FAS 114, bridge #17 – SD

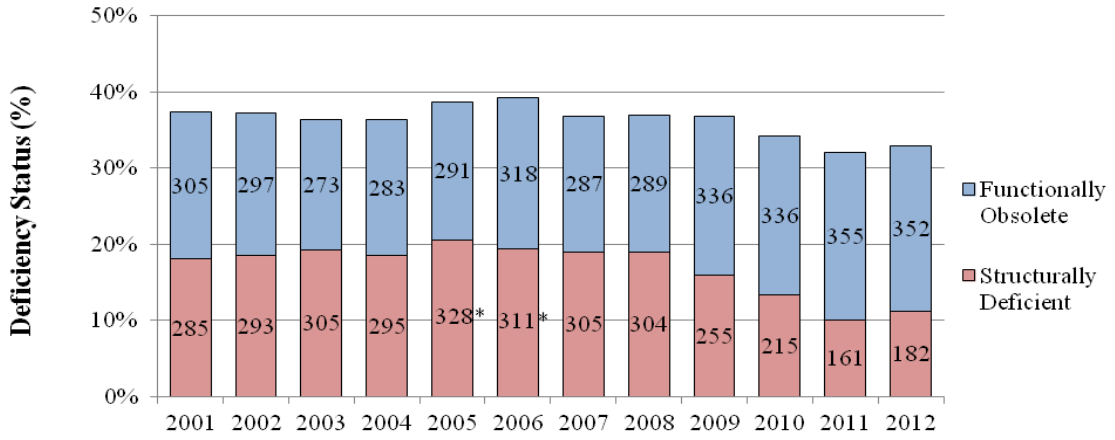
Interstate Trends



State Highway Trends



Town Highway Trends



*Corrected to Reflect Oversight in NBI Inventory Rating Reporting Format

New Performance Goals and Measures

In the past, VTrans relied on the Federal Highway Administration's measures of structural deficiency and functional obsolescence to evaluate bridge condition. Vermont, however, is evaluating new performance measures that VTrans believes better model the average condition of Vermont's bridge network. The federal measures do not do a good job evaluating a bridge's true condition, so VTrans is exploring the use of measures that better quantify critical conditions.

VTrans is not doing away with the federal measures and the Agency will continue to supply FHWA data for these determinations.

With the passage of MAP-21, the federal transportation bill, government recognized the need for and created a performance measure stipulating in law a minimum condition level requirement that National Highway System (NHS) bridge deck area on SD bridges must not exceed 10% of total NHS bridge deck area for that state and, in addition, mandated that national measures, with targets set by the state, be established.

Still being used, the previous federal measures – Structural Deficiency and Functional Obsolescence – imply but do not really tell us anything about the bridge's overall condition, nor do they tell us how bad a particular bridge component is. The federal measures only indicate that one or more bridge components have deteriorated to a point where they are within a range that requires assessment. They may or may not need treatment.

For example, our interest in fitting bridges into the historic Vermont landscape – all covered bridges and many historic truss bridges are considered functionally obsolete – lead to the development of Vermont specific standards that allow us to design bridges narrower than the federal standards. Many of Vermont's new designs and rehabilitations are considered functionally obsolete though they function very well.

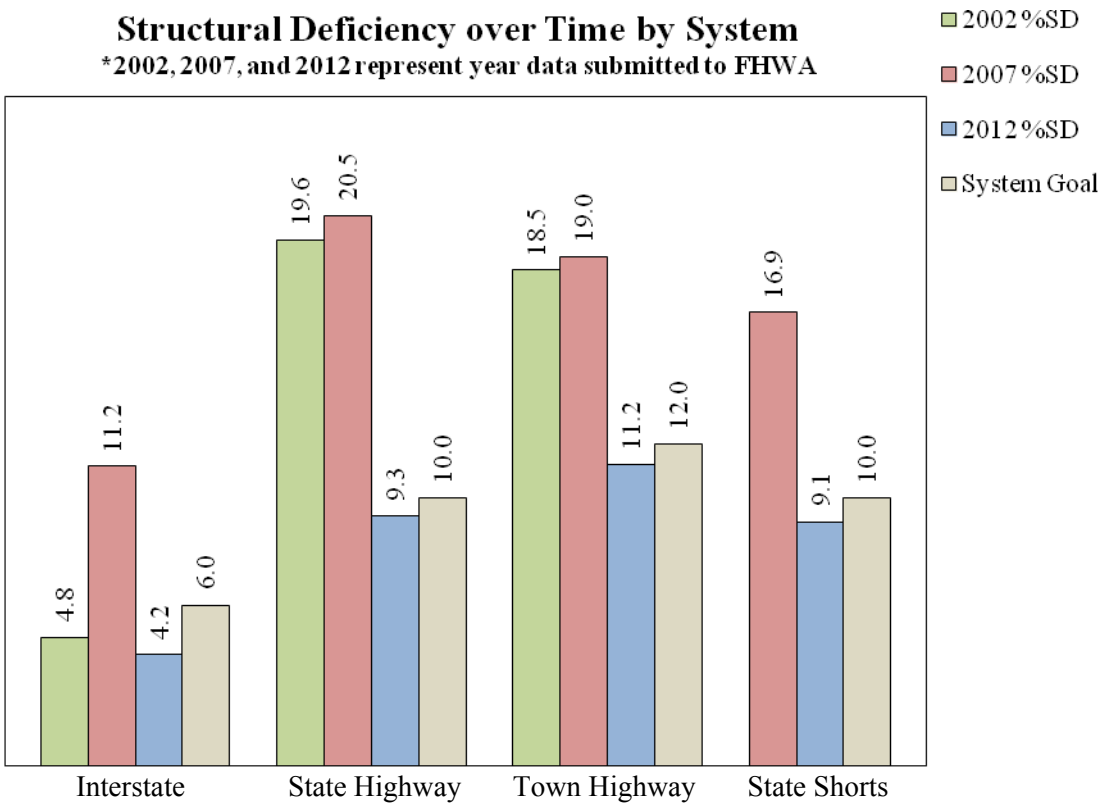
To better evaluate our structures VTrans, together with Maine and New Hampshire, are working to develop and implement a more holistic approach to measuring the condition and performance of our structures. Although these efforts are still in development, Vermont and their partner states see promise in utilizing a condition index as an effective management tool that can be compared across state lines.

Bridge condition index (BCI), percent structurally deficient by deck area and the national deficiency comparison (number of SD/FO bridges) are all measures being used and evaluated at the tri-state level (Maine, New Hampshire, and Vermont). The goal is to develop a network measure which reflects the relative health of our bridge population.

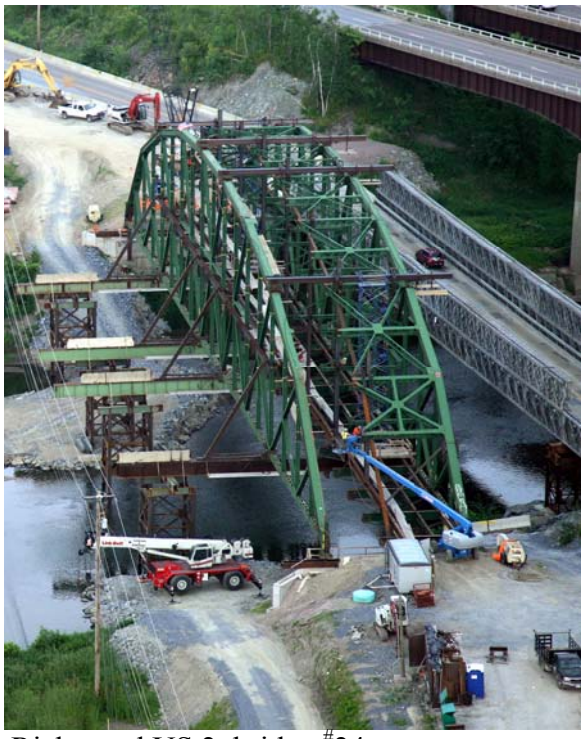
As the Agency moves to new performance measures, structural deficiency performance goals will continue.

- 6% on the interstate system (18 bridges)
- 10% on the state highway system (77 bridges)
- 12% on the town highway system (194 bridges)
- 10% on interstate/state highway system culverts (126 culverts)

The following chart represents the change in percent of structural deficiency by system over a 10-year period.



Cambridge VT 108, bridge #21



Richmond US 2, bridge #24

Preventive Maintenance, Project Selection, and Prioritization

In compliance with H.523 legislation, a priority ranking system for existing long structure projects, rehabilitation and replacement, was developed based on the following factors:

- *Bridge Condition* - 30 points maximum
- *Remaining Life* - 10 points maximum
- *Functionality* - 5 points maximum
- *Load Capacity and Use* - 15 points maximum
- *Waterway Adequacy and Scour Susceptibility* - 10 points maximum
- *Project Development and Momentum* - 5 points maximum
- *Regional Input and Priority* - 15 points maximum
- *Asset – Benefit Cost Factor* - 10 points maximum

Points are then summarized for each program, with the highest score receiving the top ranking. Rankings will change from year to year as projects are completed, as bridges change in condition, or as regional planning commissions' priorities change. These priorities are used in developing the capital program, help in deciding which bridges to advance next, and have enabled us to clear a backlog of projects in a defined, documented, and efficient manner.

Selection for proposed rehabilitation and reconstruction projects will continue to utilize the priority system. To become a project and have design initiated, the bridge will need to be among the highest ranked.

The bridge priority system, which is used to rank major bridge replacement and rehabilitation projects, will continue to be used for project selection and determining funding needs. However, this system is not inclusive as it does not rank short structures or maintenance needs, both preventive and routine.

Bridge replacement and rehabilitation projects progress through the VTrans Project Development Process. With its current reorganization, the Structures Section is aggressively looking for opportunities to streamline project delivery while reducing project scope, impacts and costs.

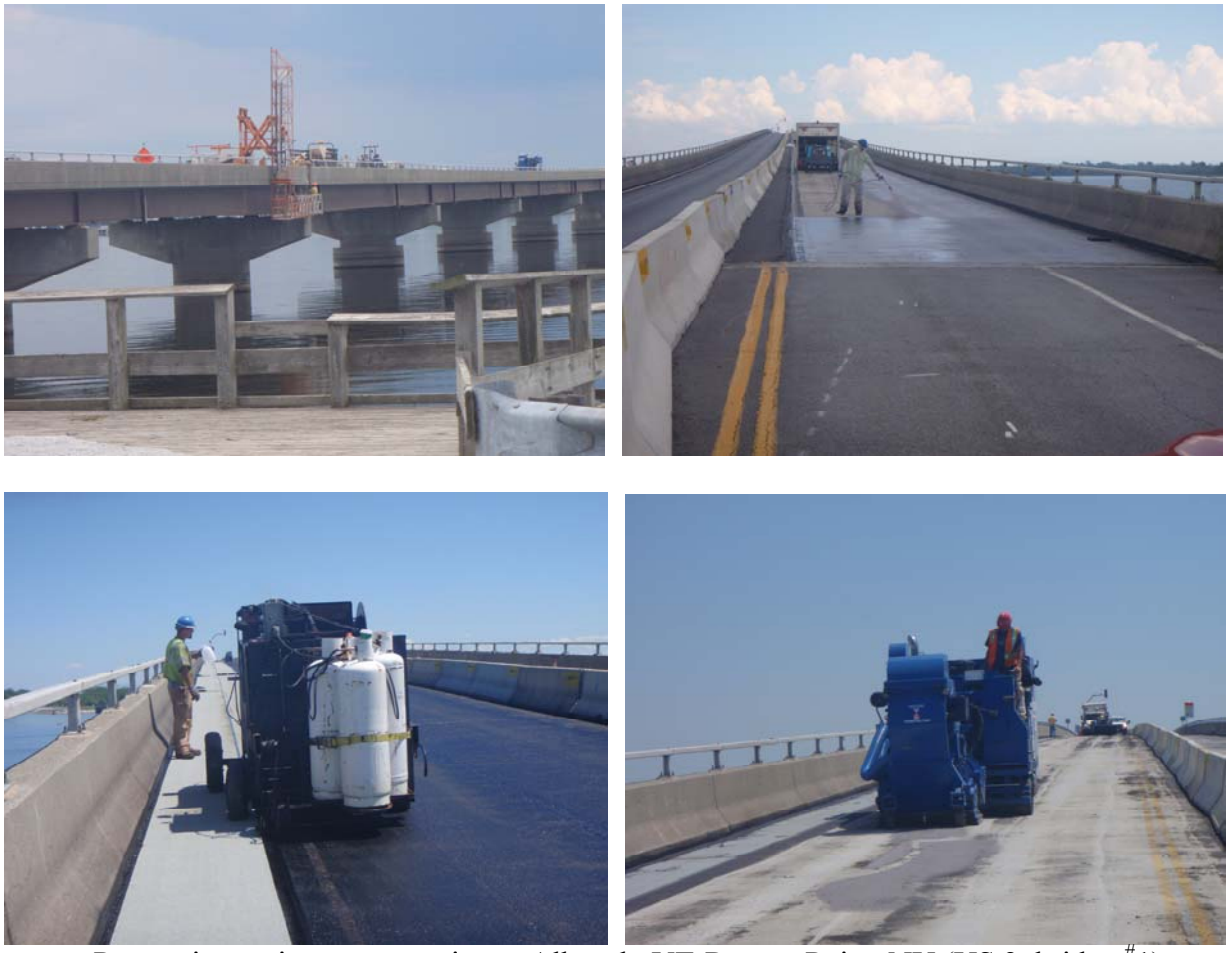
Scope reduction can be achieved by various methods: reducing approach work, minimizing or eliminating enhancements, phased construction or road closures. Although inconvenient for a community, the elimination of a temporary bridge reduces timelines, cost, need for significant right-of-way acquisition and resource impacts. Swiftness of construction and improved safety conditions are benefits of road closures.

Where appropriate, accelerated bridge construction (ABC) and materials are utilized. The technique minimizes traffic disruptions and congestions, improves work-zone safety, and lessens environmental impacts. Additionally, prefabrication can improve constructability, increase quality, and lower life-cycle costs.

The establishment of the bridge maintenance program gave us a start, enabling us to perform much-needed preventive maintenance on a limited number of bridges, but it was just the beginning. Preventive maintenance is not a high-profile activity; if done on a routine schedule, however, its benefits will be obvious as it will extend service life and delay the rate at which our bridges become structurally deficient. The Agency has substantially grown the program from its origins and has now integrated it into the regular program.

Focusing efforts toward preventive maintenance activities will slow, but not reduce the number of bridges becoming structurally deficient. Preventive maintenance does not correct existing structural deficiencies, but instead retards deterioration so that a bridge's lifespan can be extended, thus preventing the structure from becoming structurally deficient. To this end, preventive maintenance is essential to slowing the rate at which structural deficiencies evolve over time.

The value of preventive maintenance will be appropriately demonstrated in the future through new performance measures that evaluate a bridge's overall core unit condition or network health.



Preventive maintenance project – Alburgh, VT-Rouses Point, NY (US 2, bridge #1)
*deck rehabilitation, new membrane and pavement, and expansion joint

Pittsfield-Stockbridge VT 100, bridge #127 – before and after

Roxbury VT 12A, bridge #15 – before and after

Warren VT 100, bridge #165 – before and after

Challenges and Opportunities

Tropical Storm Irene brought both challenges and opportunities. Initially the inspections, temporary repairs, new temporary bridges and expedited project deliveries were daunting. As the waters receded and dust settled, we realized that opportunities had surfaced. If there is a will, and all of our partners pull together, we can get projects developed and constructed more quickly.

This led us to develop the Project Initiation and Innovation team (PIIT) and the Accelerated Bridge Program (ABP) teams. By doing more investigation upfront, projects can move forward more quickly and with fewer costly changes. Finding appropriate locations where we can forego temporary bridges and avoid the resource and ROW impacts can save us considerable time and money in permitting, design and construction. Time and money better spent on the next priority.

Both nationwide and here in Vermont, bridges are aging as traffic demands increase. Two major events – the 1927 flood and the construction of the interstate system – saw large numbers of structures built within short time frames. Vermont's challenge is how to properly plan for and meet the needs of these aging structures. Meeting this challenge is multifaceted and includes everything from having a vigilant inspection program to using asset management principles to guide decisions and a commitment to maintaining a long-term preventive maintenance program.

To ensure public safety, our inspection crews will continue their vigilance and incorporate improved bridge inspection techniques that utilize new and innovative equipment.

Using asset management principles that utilize both bridge management systems and transportation system preservation techniques is vital as states work to maintain safe bridge conditions.

Bridge maintenance is not just about fixing bridges when they break down. Proper care uses preventive maintenance to breathe new life into not-so-new bridges before they have the chance to deteriorate. Frequent inspections, not just by trained inspectors but also by those tasked with routine maintenance, along with a robust preventive maintenance program is vital to extending performance, keeping costs down, and maintaining safety.

To quickly address the new Tropical Storm Irene projects, address our pre-existing needs and prepare for the possibility for future funding increases, efforts in plan development, permit clearance and right-of-way acquisitions will be enhanced to promote a streamlined project development and contracting process.

Advancing preventive maintenance, improving prediction models, applying emerging technologies, developing decision-making tools and refining appropriate performance measures and goals are just some of the opportunities that VTrans is committed to moving forward. We will continue to work with municipalities so they not only understand the need, but have the necessary tools to maintain and preserve their assets.

Alternative contracting methods, including design-build contracts and the use of simplified designs, standards, and contracting are all being evaluated. Initial experience seems promising so each method is being considered as options for future projects.

Legislative and administration support for bridges remains strong and diligence will have its rewards. Excellent bid prices, efficient designs and strong funding levels that support bridge maintenance and rehabilitation efforts are cause for excitement and a readiness to succeed.

Please refer to the online version of this report for additional copies.

http://vtransengineering.vermont.gov/sites/aot_program_development/files/documents/structures/2012%20Structure%20Unit%20Annual%20Report.pdf

Newport City Vernon Street, bridge #9 over South Bay Lake Memphremagog
*before ↑ and under construction ↓